

Data Communication Laboratory Assignments:

A. Pipe Programs:

1. Enter two numbers from one end of the pipe and get the sum from the other end.
2. Input two numbers, through the child process and find their product and quotient in the parent process. If there is any error during the processing, display the error.
3. Collect the Ethernet address in hexadecimal and generate the 48 bit pattern of the same.
4. Input 8 numbers and display/output the result by 2X2 matrix manipulation.
5. Enter/Input 10 numbers and display the numbers in ascending order.
6. Enter any hexadecimal number and display the equivalent decimal and binary numbers.
7. Input any word up to 10 alphabets and display the number of different alphabets appearing in the word e.g. McGraw-Hill (Input), a = 1, c = 1, g = 1, h = 1, i = 1, l = 2, m = 1, r = 1, w = 1 (Output)
8. Input numbers 1 – 9 in any order and display the corresponding cardinality e.g. 2 (Input), Second (output)
9. Input temperature in °C and display the temperature in °F.
10. Enter a word and display the word in reverse order.
11. Enter a number, convert it into binary (8 bits), XOR it with 10101011 and display the number in decimal.
12. Input a set of 10 numbers and display mean and standard deviation for this set of input.

B. Packet Tracer:

1. Assignment No-1: Install Packet tracer and create a scenario in which two different groups (X and Y) of same networks are directly connected through different connecting devices. Each group having 5 systems. All 5 systems are connected through the at least 2 switches and 2 hubs.
 - (a) Show the communication between the groups.
 - (b) Provide the IP address Using (Class C)
 - (c) Explain Different wires used for the communication with explanation.
 - (d) Show the difference between hub and switch.
 - (e) Create the Star, Ring, extended Star topology and Mesh using packet traces.
2. Assignment No-2: Create a scenario in which 3 different branches (CSE, ECE and EEE) are in different VLAN connected through 4 switches. Each branch contains 4 end users. All 4 systems are connected through the switch or hub. Requirements: Minimum 4 Switches and 2 hub.
 - a) Provide the IP Address.
 - b) Configure all the switches and apply password.
 - c) Show the intra-VLAN communication.
 - d) Show inter-VLAN Communication.
3. Assignment No-3: Create a scenario in which four different groups (CSE, ME, ECE and CE) of different local area network are directly connected through intermediate devices. Each group having 4 end systems. Given scenario is exist in a same network. Do the following for the given scenario.
 - a) Provide the Static IP Address to every end device available in the network.
 - b) Label each device in the network.
 - c) Label each interface with their IP Address.
 - d) Show the Intra-LAN and inter-LAN communication.
 - e) Analyze the layer wise communication between the devices.

4. Assignment No-4: Create 3 different VLAN in CSE (VLAN-2, 3 and 4), 2 different VLAN in ME (VLAN-2, and 4), 3 different VLAN in ME (VLAN-3, 4 and 5) and 2 different VLAN in CE (VLAN-2, and 5).
 - a) Show the communication between CSE and ME (VLAN-2)
 - b) Show the communication between ECE and CE (VLAN-5)
 - c) Show the INTER-VLAN Communication between CSE and ME.

5. Assignment No-5: Create a scenario for NIT Sikkim where 6 different lab-classes (L1 to L6) are in different network and connected through 4 Routers. Each class contains 10 systems. All 10 systems are connected through the switch or hub. Lab-class L1, L2 and L3 uses Class A address, Lab-class L4, L5 and L6 uses Class C address.
 - a) Provide the IP Address
 - b) Apply the static routing.
 - c) Show the running configuration.
 - d) Show the routing Information.